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How the Wounded are cared for in War.

I. THE NAVY.

II. THE ARMY.

By

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THE DEATH OF NELSON—LYING ON DECK AFTER RECEIVING THE FATAL WOUND. [*Maclise*].

How the Wounded are cared for in War.

THE NAVY.

ALTHOUGH 100 years and more have come and gone since there was enacted the scene of Nelson's death depicted in the adjoining illustration, unconsciously its details still mould our ideas of naval warfare and tinge our conceptions of a naval fight. In fancy we picture the smoke and flame of battle, the flash of the guns and the bursting of the shells, and sympathise with the sailor-heroes stricken in the conflict. But 100 years have made great changes in the conditions under which a naval combat is now waged, and the surroundings are very different from those of Nelson's day. Britain's "wooden walls" are a thing of the past, and have been replaced by the modern fighting ironclad with its enormous guns and intricate machinery, upon which all the resources of science have been expended with the object of making our warships the most powerful and effective engines of destruction that it is possible to devise. When one of these titanic monsters meets a foe of similar dimensions and of equal gun fire, it follows of necessity that should either of them be struck by a present-day massive high-explosive shell, the destruction wrought on board must be appalling both to the vessel herself and to the crew that man her. In the painting by our celebrated marine artist, W. L. Wyllie, R.A., of the great Jutland sea encounter, of which we give an illustration, there are shown the outward aspects of a modern naval battle, but in thought we are left to picture the scenes that were enacted behind the armour-plated walls of the contending ships, and we cannot think too highly of the acts of heroism and of pluck that marked the behaviour and bearing of the crew who were struck down wounded or burnt, nor can we admire too much the conduct of the surgeons who tended and succoured them under most trying conditions.

The Naval Medical arrangements in War are adapted to meet the needs of a big general action as well as of individual vessels after a minor encounter, and their aim in all cases is to ensure the wounded sailor having early and skilful medical assistance. Briefly, they may be described as having three Stages :—

1.—FIRST AID.
2.—EVACUATING.
3.—DISTRIBUTING.

These three Stages correspond to the three Zones of military assistance, and like them they form a chain of relief, each Stage having its own special duties and work. The FIRST AID STAGE is carried out on board every individual ship, and its leading characteristic is the rendering of First Aid to the wounded after their collection from the different parts of the vessel. In connection with the carrying out of this bit of work quickly, efficiently, and with as much safety to the wounded as possible, certain definite arrangements exist on board every vessel.

Beginning with "First Aid" Dressings, it should be noted that the supply of "First Aid Haversacks," which every warship has in time of peace is, on the outbreak of war, largely increased numerically, and additional haversacks are placed about the ship as well in all the positions where during the action men may be shut off in distinct compartments from assistance, as for instance, in the conning tower, the torpedo flats, the workshops, and the engine rooms. Every gun, too, is supplied with its box or cupboard filled with packages of dressings. Further, there are distributed throughout the ship and placed in accessible places large tin boxes containing reserve dressings, tourniquets, scissors, and splints. From these boxes the First Aid haversacks and the gun boxes can be replenished during a lull in the engagement.

The next important point in connection with the rendering of First Aid is that every modern ironclad possesses one or more DISTRIBUTING or DRESSING STATIONS. There are usually two of them, one placed in the fore and the other in the aft portion of the ship. They have been provided for in the construction of the vessel to take the place of the ordinary "sick bay,"

JUTLAND, 31ST MAY, 1916, H.M. SHIPS *WARSPITE* AND *WARRIOR*.

W. L. Wyllie, R.A.

The Copyright of this Picture is strictly reserved for the Artist, by Walter Judd, Ltd., Publishers of the "Royal Academy Illustrated."

Diagrammatic Scheme of Navy Medical Assistance to Wounded in the Present War.

FIRST AID STAGE.

FIGHTING SHIPS.

1) FIRST AID IN DRESSING STATION ON BOARD THE FIGHTING SHIP.

This Dressing Station is worked by the Naval Surgeon and his Assistants. The collecting of the wounded being done by the Ambulance party.

EVACUATING STAGE.

HOSPITAL SHIPS.

(2) HOSPITAL SHIP. Evacuation is carried out by these vessels, one of which, if possible, comes alongside the Fighting Ship. Usually, however, the transference of the Wounded is done by lowering them into special Hospital Boats or Barges which convey them to the Hospital Ship for conveyance to the shore.

QUAYHEAD.

Transport by Motor Ambulance.

RAILHEAD.

For entraining Wounded into Ambulance Trains.

DETRAINING WOUNDED.

Transport by Motor Ambulance.

DISTRIBUTING STAGE.

(3) BASE HOSPITAL.

BASE HOSPITAL.

Patients are transferred from the Base Hospitals to

Auxiliary Hospitals and Convalescent Homes.

which is generally situated well forward, and is in an unprotected part of the ship. They are located in the most protected, that is the most heavily armoured parts of the vessel, so that they are often in the vicinity of the boiler rooms or engine-room compartments. Owing to their situation there arise difficulties of space, ventilation, lighting, and temperature, which have to be specially attended to, but the most serious problem is a supply of fresh air to them, as in an action the source of air supply may be seriously contaminated by the suffocating fumes given off by the bursting of lyddite shells on board, as well as by the odours of charred and burning paint. In consequence of this the fans, though working, may be only pumping down noxious vapours. No doubt the recent improved system of ventilation in our battleships minimises the risks of air contamination, but it has its anxieties, and it has even been suggested that this possible danger should be met by having a supply of oxygen at the Dressing Stations for use if required. These Dressing Stations are lit by electricity, and have permanent fittings in the shape of operating tables, shelves, cupboards, and other appliances, so that they are always ready, and all that is required when "immediate action" is sounded is to transfer to them the instruments, dressings, and general contents of the "sick bay," together with any patients that may be in it. These Dressing Stations correspond to the "cockpit" of the old wooden man-of-war, which, it may be mentioned, was an apartment under the lower gun-deck and below the water-line. It formed in everyday life the quarters for junior officers, but during an engagement it was allocated to the surgeon and his assistants for the reception and treatment of the wounded during the battle. It was to the "cock-pit" Nelson was removed from the deck where he fell wounded, and it was there he died amidst the wounded sailors of the *Victory*.

Lastly, it is recognised that even on board a battleship provision must be made for the collection of the wounded and their rapid and comfortable removal to the Dressing Stations. In view of this, instruction is given to the crew in First Aid, in the carrying of wounded men, and in the exact position of the Dressing Stations, so that the Bearers may know where to take the casualties. As to the form of transport taught, it is by improvised methods and by stretchers. Of the former, that by hand-seats, or "man-handling," as it is sometimes called,

THE DEATH OF NELSON IN THE COCKPIT OF THE *VICTORY*.

By kind permission of Messrs. Cassell & Co., Ltd., London.

is the one generally adopted, while of stretchers, the Neil-Robertson is the one in universal use on board ship, as by it removal is safe and possible even from small compartments as well as down the escapes in turrets and round difficult corners. All naval authorities seem agreed that these methods of transport meet best the special conditions of naval warfare, and not only convey the wounded easily through narrow spaces and with rapidity up and down ladders, but are least in the way of the working and ammunition parties of the ship.

As to the preliminary arrangements to be made immediately before a battle, there are some that require to be carried out at once. The first is the transference of patients and of all the furnishings of the "sick bay" to the Dressing Stations. After this, the sterilisation of dressings and instruments takes place. Care is taken to have plenty of hot (boiled) water and a supply of ice laid in; and candles or accumulators are provided in reserve in case of the electric light on the ship breaking down. The necessary apparatus for the cleansing and douching of wounds, viz., syringes and irrigators, is got ready, as also abundance of sterilised dressings and bandages, with swabs for drying the wounds and surrounding areas after irrigation. Although the great bulk of serious cases in a naval engagement are from shell wounds, there is a large number of burns and scalds. For instance, after the battle of Jutland Bank, of 110 wounded men landed at the Royal Naval Hospital at South Queensferry, 62 suffered from shell wounds, 42 from burns, 4 from noxious fumes, and 2 from severe shock. There are two classes of burns. One is the result of the ignition of cordite supplies by enemy shells, the other caused by the flash of bursting shells. The former are usually terribly severe, but the latter less so. Both varieties require immediate treatment in the matter of shock and relief of pain. For dealing with the latter, picric acid lint is prepared and sprays with liquid paraffin, known as "Ambrine," to be sprayed over the burns, and form a protective covering for them. It should, however, be mentioned that special precautions are taken to prevent, as far as possible, these burns by what is known as the "anti-flash" protection. Our sailors do not now fight stripped to the waist, as in Nelson's day. In fact, the opposite is the case, and the gunners show as little bare skin as possible, wearing a headgear made of white canvas, which completely covers

their heads and necks, leaving only visible the nose and eyes. The following newspaper extract gives a description of the sailors as they stand-to ready for action :—" The gun crews look like a collection of corpses, bolt upright, silent, attentive ; each man with a hood which just shows his eyes and nose ; round his waist or neck is slung a respirator or gas-mask ; his hands are gloved. As little as possible of his flesh or hair is exposed to the flash of the huge projectiles, which by their rush of flame are liable to inflict such terrible burns. As the infantryman on land wears head armour against bullet and shell-splinter, so the gunner at sea is covered and protected against flame."

Another necessary detail is the provision of the various antiseptic and saline solutions used for cleansing the wounds and adjacent skin. Finally, the assembling and posting of the Ambulance unit for the transport of the wounded completes the immediate battle preliminaries. It may also be noted that if time permits the surgeon sees that the crew are provided with clean clothing (sterilised, if possible), and carries out a personal inspection of them to be sure that the ears are plugged with wool to prevent rupture of the drums of the ears.

With the commencement of the battle, casualties may occur at once, and the wounded are brought by the Ambulance men to the Dressing Stations for surgical treatment, which really consists of First Aid to all, both those slightly and those severely wounded. No operations of any severity are done, as they are quite out of the question during a naval action. Briefly summarised, the First Aid treatment furnished embraces the following points :—

1. Combating shock.
2. Preventing and correcting sepsis in the wounds by cleansing them thoroughly.
3. Applying suitable dressings, and, in cases of fracture, proper splints as support.
4. Making the patient comfortable and relieving thirst.

Of the above details, the most important and the one that most affects the future of the case is the prevention or correction of sepsis. Naval surgeons vary as to the extent of the cleansing procedure they adopt, but all are agreed that the First Aid rendered should include a " vigorous prosecution of antisepsis, and as early as

H.M. HOSPITAL SHIP, *SAINT MARGARET OF SCOTLAND*,

Presented by the Scottish Branch B.R.C.S. to the Royal Navy.

possible." After the wounded have been attended to it is necessary to provide stowage accommodation for them during the action so as to free the space in the Dressing Station. This is usually done in any place under armour near the Dressing Station. It is carried out under the "Tier system," by the wire-roping plan, and the wounded remain there until after the engagement. Should there be a lull in the action the cases may be looked over again, if not too numerous, but until the ship is actually out of the "Danger Zone" of the battle, no special surgical work, save anything urgently needed, is attempted. Any necessary "re-dressing" is done, as also splints applied.

Enough has been said to show the very methodical and important treatment that is carried out during the First Aid Stage, and to bring out the difficult and trying task that falls to the naval surgeon in the execution of it. From the moment that the armoured doors are closed and the action begins he is shut off from the world above. He hears nothing but the din of the guns, while he feels the ship trembling from stem to stern by their concussion. After a time the noxious fumes of lyddite that pervade all the decks may find their way into the Dressing Station and add a sense of suffocation to the dangers of the fight. Altogether the conditions are calculated to test the strongest nerves and demand qualities of the highest courage and determination, and we don't perhaps sufficiently realise the surroundings under which our naval surgeons worked in such a battle as that of Jutland Bank, and the experiences our wounded sailors underwent while lying in their Dressing Stations.

Coming now to the EVACUATING STAGE, we are brought into contact with the Hospital Ship, which may be termed the First Line of Assistance. Its duty is an important one, for it is usually into a Hospital Ship that the wounded are evacuated for conveyance ashore, receiving at the same time treatment when on board. Hence, we see that the evacuation is an important matter, both from the wounded man's point of view, and also for the efficiency of the Fighting Ship to which he belongs.

The actual removal of the wounded from the Fighting Ships may be carried out in various ways. For instance, the Hospital Ship may come alongside the warship, thus permitting the wounded to be carried in their service

cots and stretchers across the gangway on to her. This is undoubtedly the ideal plan, but, in reality, it is seldom possible. Another way is to take the wounded men in their cots and stretchers and place them one by one into the tray or "cot carrier." This latter is then hoisted out by means of a derrick and lowered into a hospital boat or barge, the latter taking the patients either to the Hospital Ship, or, it may be, ashore, and from there they are moved into the Ambulance Train, or are sent into a local hospital, according to the arrangement decided on. In all this matter of evacuation, however, there is kept in view the fact that a wounded man should be moved as little as possible and with the greatest care.

As regards the arrangements for the wounded on Hospital Ships, there is considerable difference. The number of cots they carry may vary, but everything is done to have them well staffed, well ventilated, and suitably equipped. The preparedness of the Navy for war is well illustrated by the fact that four days after the order to mobilise for war was received, three ocean liners, fully staffed and equipped, were ready to act as Hospital Carriers, and within three weeks, six more were available. In peace time, Hospital Ships are attached to the Fleets at their different bases, and they serve not only to relieve the ships of their sick, but also to give them medical treatment. In time of war, Hospital Ships do not proceed to the scene of an action, and that for two chief reasons, the first one being the difficulty of transferring wounded at sea, and, secondly, if heaved to with their engines stopped, they would be liable to be torpedoed by submarines. Their duty is to receive the wounded from warships after an action. As already described, the removal of the wounded on to the Hospital Ship is done by special hospital boats or barges. Some of these are known as "converted drifters," while others are ship's picket boats and cutters. The converted drifters are, on the whole, preferable to the ship's boats, as they behave better in bad weather, and they can take as many as eighteen cot cases under cover. When they come alongside the Hospital Ship, the wounded are taken on board by placing them on their cots in the tray or "cot carrier," and hoisting them in by means of an hydraulic or steam crane. The wounded may remain on the Hospital Ship and be treated there, or they may be disembarked and placed in a Local Hospital or put into an Ambulance Train. Disembarkation is, of course, the

exact opposite of the embarkation up to the point when the cots are deposited on the jetty, where padded trestles are placed to receive the "cot carriers" until they are transferred to the Motor Ambulances of the Naval Medical Transport Organisation. The Hospital Ships are arranged to deal with the wounded after an action, and they have their operating theatres and all the necessary appliances for treating the various classes of cases. It sometimes happens that those severely wounded and those suffering from shock are retained on them, it being felt that to subject them to a long railway journey under such conditions is not advisable. At the same time, it would not do to retain many cases on the Hospital Ships, as fresh wounded could not then be received by them, and they would be for the time unavailable for use.

Allusion has been made to the Naval Ambulance Trains, of which there are several. Three are fully sized, with 136 cots, and one is smaller with 76 cots. These cots are suspended in two tiers from the roof of the coaches, and all swinging is prevented by means of a special clip. This arrangement of the cots minimises jolting and jarring, and also allows of easy cleaning and disinfecting of the trains. It should be mentioned here that the standard naval cot has special characteristics of its own, and is a feature of the Navy system of dealing with the wounded, its principle being that from the time a patient is placed in a cot on board a Fighting Ship until he is finally put to bed in a Hospital, he is never moved out of the cot. He and his cot travel together all the way, thus saving much of the pain and suffering involved in the frequent transfers by stretchers, ambulances, and trains. All the Ambulance Trains and Motor Ambulances of the Naval Medical Transport Organisation are adapted to this standard cot. In this way there is allowed an exchange of cots, and, if traced through all the various stages of removal, it will be found that by the plan followed, the Fighting Ship always maintains her complement of clean cots, while, by keeping the wounded man in his own cot, he is saved all moving, and there is also an economy of time at the railway stations.

Lastly, we come to the DISTRIBUTING STAGE of the Naval wounded, which is the SECOND LINE OF ASSISTANCE, and includes the BASE HOSPITALS. The wounded, as we saw, may be placed in Local Hospitals, or

they may be brought down the Lines of Communications by the Naval Ambulance Trains to the great Naval Hospitals, which are located mainly in the South of England at Portsmouth, Plymouth, Chatham, and also at Haulbowline at Cork Harbour. Similar Naval Hospitals are found abroad at Malta, Gibraltar, Bermuda, Cape of Good Hope, and other places, which, in an overseas war like the present, are constantly in use. In addition to the above, the Admiralty has a number of inland Hospitals and Convalescent Homes, gifted by private individuals, to which patients can be transferred should there be pressure on the Base Hospitals. In Scotland, there are several of these, and they serve as relief centres for the large Hospitals, being the last link in the long chain of medical assistance which stretches from the Fighting Ship wherever she may be placed to the restfulness of the different Naval Hospitals, where the din of the guns becomes only a memory, and the kindness and comfort with which the wounded are surrounded are a little compensation for the sufferings and trials they have undergone.

The whole country knows of the splendid conduct of Boy First-Class John Travers Cornwall, V.C., of H.M.S. *Chester* ; but in illustration of what has been said of the heroism and courage of both men and surgeons under the trying surroundings of a naval fight, the following extracts from newspaper accounts of the Jutland Battle may be quoted :—

"More marvellous than the behaviour of material was the conduct of the men on that great day. Of this we heard many stories from the actors in the drama. A heavy shell struck a big-gun turret with a crash that was felt throughout the ship. It put every man of one gun out of action. The gun-layer was least injured, but he had one leg carried off. With the limb hanging by a shred of flesh he tried to rally the injured and dying in his turret and continue the battle. He never felt his injury. As he was calling on the dying men to go back to their gun, he was removed in a stretcher, and the fleet surgeon saved his heroic life, operating in a lull of the battle by the light of an electric torch alone. Of none do the men speak with more enthusiasm than of their surgeon."

Again :—"In one great ship bellying smoke filled the doctor's rooms at the very moment when the stream of

wounded began to flow down to them, adding suffocation to the thousand other perils of the work. The ship reeled under pounding blows, and she staggered in a difficult sea : the concussion of her guns was so great as to preclude the possibility of adequate surgical assistance. Wearing gas masks, the doctors did what they could, bending their energies unselfishly to the great task, as is the tradition of their calling. In another ship, an enemy shell destroyed the aft Dressing Station utterly, so that the whole work of relief fell on the remaining forward one. Hour after hour, without reck of time or exhaustion, the staff laboured to overtake its great task. Another ship was holed, and had her electric light cut off. The Dressing Station was in darkness ; it was foul with the gas fumes from the enemy's shells ; water poured in by the holes in the vessel's sides. Here single-handed a young naval surgeon toiled by the light of an electric torch until at length he was ordered to get his wounded away because the ship was sinking. And this task he achieved so well that not a life was lost. The surgeons witnessed strange scenes during these hours, and perhaps the strangest of all was that which followed the announcement that a German ship had gone down, for then all the wounded, including the man on the operating table, began to cheer."

THE ARMY.

THE organisation of the Medical Service in the Field is planned in war time to bring a wounded man as quickly as possible under surgical eare, and the arrangements for doing so are based on the principle of dividing the theatre of war into three Zones, viz. :—

1.—COLLECTING.
2.—EVACUATING.
3.—DISTRIBUTING.

These three Zones form a chain of relief, in which each Zone has its duties and responsibilities, but, like the links of a chain, they must to some extent overlap eaeh other.

The COLLECTING Zone corresponds with the aetual fighting area, and in it are situated (1) the Regimental Aid Posts of the Regimental Medieal Establishments ; and (2) the Field Ambulanees with their Advaneed and their own Dressing Stations. The ehief work of this Zone eonsists in eolleeting and bringing into shelter the wounded, so that they may receive medieal first aid, and then be moved baekwards to the Evaeuating Zone.

The EVACUATING Zone really has its field of work on the Lines of Communieation, and in it are found the Casualty Clearing Stations (briefly written C.C.S.), the Hospital Trains, and, in eertain eircumstanees, Stationary Hospitals. It eontains also an Advaneed Depot of Medieal Stores.

The DISTRIBUTING Zone varies under different eireumstanees, but to it belong the General Hospitals, Convaleseent Depots, Ambulanee Trains, Hospital Ships, and the Military Hospitals in the United Kingdom. It ineludes a portion of the Lines of Communication, and, in an overseas war, part of it may be quite outside the actual theatre of operations. In it also is plaeed a Base Depot of Medical Stores.

The two aecompanying diagrams give in diagrammatic form the different stages of relief to the wounded soldier, and from them it will be seen that the first unit of assistance in the COLLECTING Zone is the First

THE FIRST REGIMENTAL AID POST.

The placard seen in the illustration is the necessary guide to the wounded.

By kind permission of "Alfieri Picture Service, London."

Regimental Aid Post, which is usually placed near a communication trench, and is worked by the Regimental Medical Officer and by the Regimental Stretcher-Bearers.

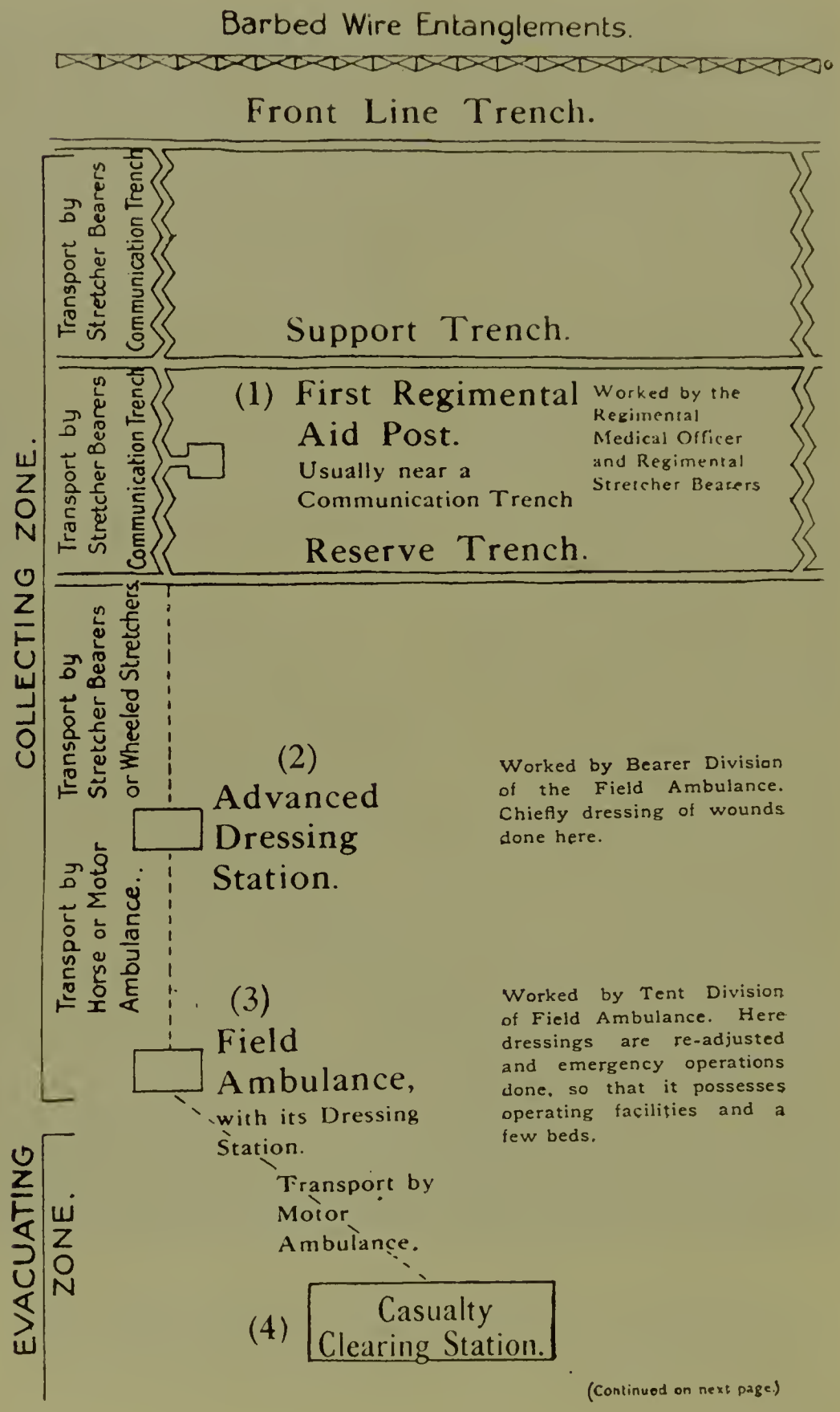
In connection with this stage of assistance, it should be noted that a *First Field Dressing* forms a component part of every British soldier's kit on active sevice, so as to be available, at all times and in all places, as a first dressing for wounds. When officers and men go on service, this *First Field Dressing* is carried in the pocket on the right side of the skirt of the frock.

The next unit of assistance is the Advanced Dressing Station. It may be a mile or more behind the firing line, and it is placed in some sheltered position, varying with the locality. Thus, in the recent Somme Campaign, the Advanced Dressing Station at Vermeilles was in the cellar of a building, and the one at Contalmaison was in a captured roomy Army dug-out. It is worked by the Bearer Division of the Field Ambulance, and the dressing of wounds is done at it.

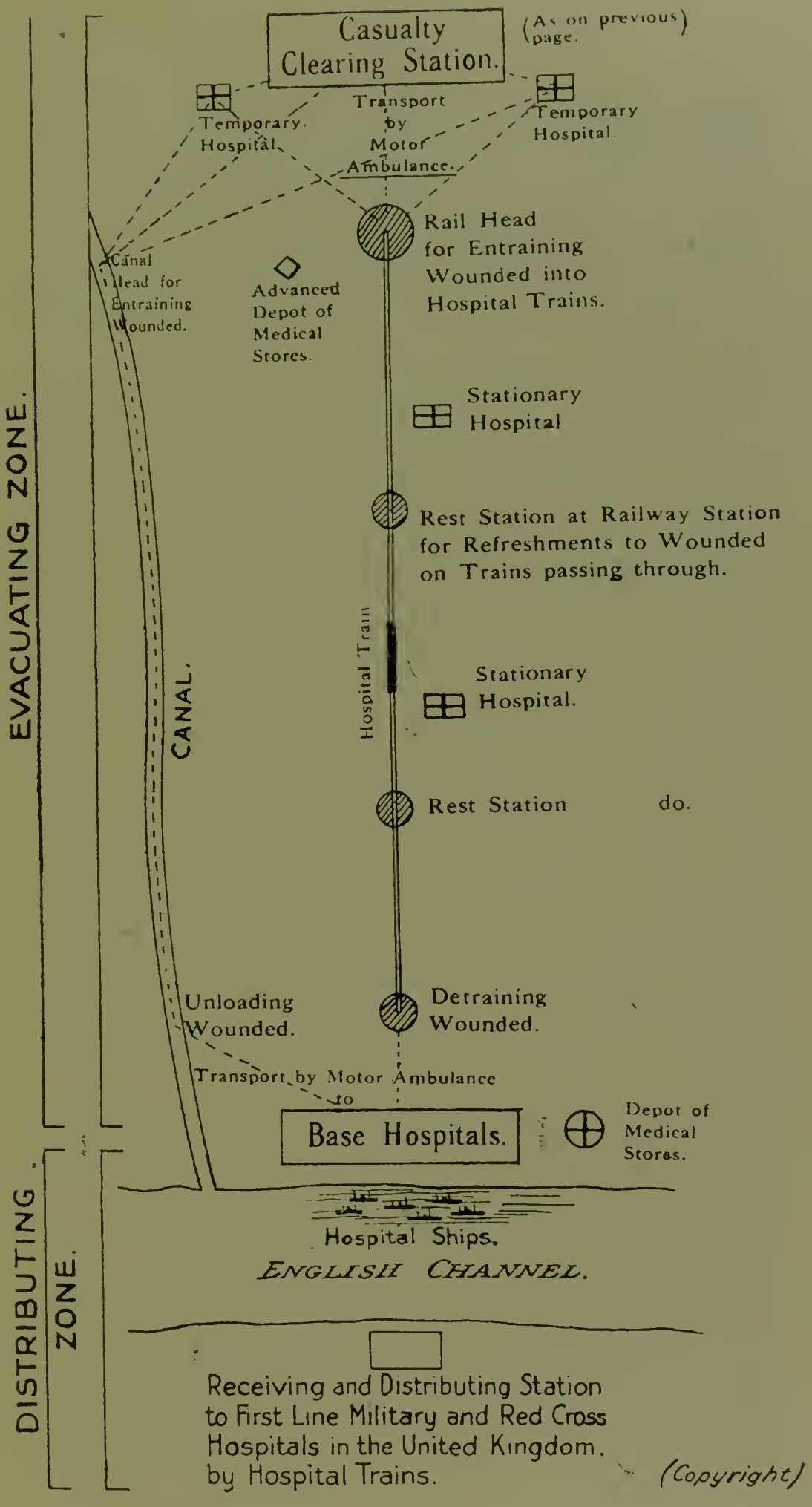
The next unit of assistance is the Field Ambulance, with its *Dressing Station*. It may be three miles or more from the firing line, and is generally located, if possible, in a building; but recently, at the Somme, as all the buildings had been destroyed, it was housed in tents. This Field Ambulance is worked by the Tent Division of the Field Ambulance, and here dressings are readjusted and emergency operations done. To allow of the latter being carried out, the Field Ambulance possesses operating facilities, and has beds in the Tent Division. Briefly, it may be said that the chief work of these Units of Assistance in the Collecting Zone is to collect and bring into shelter the wounded, so that they may receive surgical first aid; and, after this has been given, to move them backwards to the EVACUATING Zone. In the *Evacuating* Zone the transport is carried out at first by stretcher-bearers, and afterwards by the stretcher-bearers of the Bearer Division, or by wheeled stretchers. Subsequently, the transport from the Advanced Dressing Station to the Field Ambulances is done by Horse or Motor Ambulances.

Coming now to the EVACUATING Zone, which really has its field of work on the Lines of Communication, the first unit we come across is the *Casualty Clearing Station*

Diagrammatic Scheme of Army Medical Assistance to Wounded in the Present War.


Barbed Wire Entanglements.
Front Line Trench.
Transport by Stretcher Bearers
Communication Trench
Support Trench.
Transport by Stretcher Bearers
Communication Trench
(1) First Regimental Aid Post.
Usually near a Communication Trench
Worked by the Regimental Medical Officer and Regimental Stretcher Bearers
Reserve Trench.
COLLECTING ZONE.
Transport by Stretcher Bearers or Wheeled Stretchers
(2) Advanced Dressing Station.
Worked by Bearer Division of the Field Ambulance. Chiefly dressing of wounds done here.
Transport by Horse or Motor Ambulance.
(3) Field Ambulance, with its Dressing Station.
Worked by Tent Division of Field Ambulance. Here dressings are re-adjusted and emergency operations done, so that it possesses operating facilities and a few beds.
EVACUATING ZONE.
Transport by Motor Ambulance.
(4) Casualty Clearing Station.

(Continued on next page.)


Casualty Clearing Station.
(As on previous page.)
Temporary Hospital.
Transport by Motor Ambulance.
Temporary Hospital.
Rail Head for Entraining Wounded into Hospital Trains.
Canal Head for Entraining Wounded.
Advanced Depot of Medical Stores.
Stationary Hospital
Rest Station at Railway Station for Refreshments to Wounded on Trains passing through.
EVACUATING ZONE.
CANAL.
Hospital Train
Stationary Hospital.
Rest Station do.
Unloading Wounded.
Detraining Wounded.
Transport by Motor Ambulance to
Base Hospitals.
Depot of Medical Stores.
Hospital Ships.
ENGLISH CHANNEL.
DISTRIBUTING ZONE.
Receiving and Distributing Station to First Line Military and Red Cross Hospitals in the United Kingdom. by Hospital Trains.
(Copyright)

(briefly written C.C.S.). The role of the Casualty Clearing Station is an important one, as it is really mobile, and it moves up close to the fighting area, so that it serves as a pivot upon which the removal of the sick and wounded works, because, on the one hand, it constantly receives fresh relays of wounded from the Front, and, on the other hand, it moves on to the Lines of Communication for evacuation those patients who have undergone treatment.

The *Casualty Clearing Station* is usually placed some three to four miles behind the Field Ambulance, so that it may be from seven to eight miles behind the Front Line. It is equipped for 200 beds, but it can be expanded to any extent. It is furnished with a large amount of medical and surgical stores, and all the instruments and equipment necessary for operative work. It has a staff of eight Officers and eighty other ranks of the R.A.M.C., but it also has some seven to ten Nursing Sisters attached to it, and is thus the most advanced Unit to which a female nursing staff is attached. It may be housed in tents, or in a building. It is equipped with ordinary stretchers, or with stretchers on trestles, and it has facilities for performing operations, being provided with a portable operating table, sterilisers, instruments, and a considerable amount of surgical stores. It may be lighted by ordinary oil lamps, but in some cases there is provision for lighting by acetylene gas, this being laid on by rubber tubing from the outside carbide generator. Every Division of the Army has its *Casualty Clearing Station*, and occasionally, when circumstances call for it, the C.C.S. supplies nearer the fighting-line an "Emergency Hospital" for the treatment of very special cases, such as abdominal ones.

The duties in the Field belonging to a Casualty Clearing Station are to receive the wounded, to classify them, and to arrange for their speedy evacuation down the Lines of Communication. As a rule, a certain proportion of the cases admitted to it are of a serious nature, and may either require operation, or be unable to stand the fatigue of transport, so that it may be necessary to make a portion of the C.C.S. act as a hospital in the usual sense of the term. There may also be a certain number of cases so slightly injured that they may be fit for duty after a day or two's rest. These cases are also retained in the C.C.S. In the diagram it will be noticed that a

Temporary Hospital has been introduced to indicate that it may be necessary to convert a part of the C.C.S. into hospital wards for those serious cases and for the very slight ones, both of whom are retained, it being necessary to keep the former longer than the ordinary three or four days given in the C.C.S., while in cases where the injuries are slight it is better to do so, as it facilitates their getting quickly back to the firing line. For the serious cases beds, as a rule, are provided, if it is at all possible, but the ordinary cases and the slightly injured ones rest upon stretchers or upon stretcher beds.

From what has been said, it must be quite evident that the Casualty Clearing Station plays a very important part in the scheme of assistance to the wounded after the battle. No doubt a large percentage of the patients are slightly injured, but, unfortunately, this is not the universal rule, and in a considerable proportion it is found that the injuries inflicted in this war show a severity far beyond that observed in previous campaigns, a fact easily understood when the nature of the projectiles used and the high explosives employed in the present day are considered, for, in trench warfare, the men are exposed not so much to rifle bullets as to shell fire, which, with its rough and jagged fragments, causes serious damage. Although this is so, the conclusion must not be drawn that the Casualty Clearing Station is a scene of great suffering and of audibly expressed pain. The remarkable thing is, that upon the individuals themselves these injuries seem to have a quieting effect, as Sir Anthony Bowlby, in his Bradshaw Lectures upon Wounds, points out. He says :—" I think what would strike most forcibly any observant person who was brought into a room filled with large numbers of recently wounded men from an important fight would be the fact that nearly all of them were asleep, in spite of wounds which one might well suppose would effectually banish sleep. There they lie on their stretchers with muddy or wet clothes, with bandaged limbs or head, quite content with the transition from the turmoil of battle to the comparative ease of a crowded room, which in itself offers little comfort." This atmosphere of comparative peace expresses the exhaustion of an overwrought nervous system, and of the reaction after a strenuous excitement. Fortunately, many that are pulseless and cold on arrival, under the influence of warmth and certain drugs, often rally quickly, and throw off the state of collapse in which

they have arrived, but it is an interesting fact that few of these cases are able to take food, as it invariably induces sickness.

In a Casualty Clearing Station it is necessary to make provision for the different duties that it has to fulfil. Hence it has its operating room, wards with extemporary beds, and a temporary hospital furnished with beds. Off one of the wards is generally a small *Annexe* furnished with the means for some sick room cookery, such as making beef tea, ordinary tea, preparing milk foods, etc. In this Annexe are spare articles of equipment, such as feeding cups, and a supply of surgical stores. The Casualty Clearing Station is, as a rule, not provided with an X-Ray room, reliance for this important adjunct to treatment being placed upon either one of the travelling X-Ray waggons which pass along behind the fighting line, or, if a town is at all adjacent, on obtaining facilities for X-Ray photography in connection with any Civil Hospital there. This X-Ray work is a most important help in the diagnosis of the injuries received, as in fractures, and to show bullets, portions of shrapnel, shell, or any foreign bodies that may have found their way into the wound or its vicinity. It is in the localising of foreign bodies that the X-Ray apparatus is specially useful. The cooking for the Casualty Clearing Station is usually done in what is called a Field Kitchen, in which camp kettles and Congo stoves, with ovens, boilers with lids, baking dishes, shelves, etc., play an important part.

From the Casualty Clearing Station the wounded are taken by motor ambulance to the specially-constructed Hospital Ambulance Trains. There are now a large number of these, nearly all of which have been specially constructed for the purpose, and they are really hospitals on wheels. They are brought up into fairly close touch with the Casualty Clearing Station, and at the rail head the wounded are removed from the motor ambulances into these trains, as shown in illustration. The trains convey their occupants down the Lines of Communication to the Base Hospitals, the wounded, after being detrained, being conveyed by motor ambulance to these hospitals.

Sometimes on the Lines of Communication *Stationary Hospitals* are placed where the wounded may be admitted, if it is not advisable to send them on to the Base Hospitals.

AUSTRALIAN ADVANCE DRESSING STATION ON THE SOMME FRONT.

By H. Septimus Power.

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Along the Lines of Communication there are also placed at intervals *Rest Stations*, where refreshments are furnished to the wounded on the trains as they pass through.

While the above is the usual method of transport, in some cases suitable waterways may exist, and water transport by Canals is resorted to. This has been the case in France, and it is found that such water transport is for many cases the best, as in head injuries and very bad compound fractures of limbs, where all jolting has

HOSPITAL TRAIN "SOMEWHERE IN FRANCE" BEING LOADED BY THE SCOTTISH SECTION.

to be avoided. In the diagram this mode of transport is illustrated, and when it is employed the wounded are brought from the *Casualty Clearing Station* by motor ambulance to a special point where they are entrained into barges.

As already pointed out, the EVACUATING Zone really has its field of work on the Lines of Communication. It should be noticed that in it there is placed an *Advanced Depot* of medical stores.

Coming now to the DISTRIBUTING Zone, this varies under certain circumstances, and to it belong the General Hospitals, Convalescent Depots, and the Military Hospitals in the United Kingdom. In it is included a portion of the Lines of Communication, and, in an overseas war, such as the present, part of it may be quite outside the actual theatre of operations. In the present war, to allow of the wounded passing from the Base Hospitals to a *Receiving and Distributing Centre*, they are taken across the English Channel in hospital ships, and, on arrival in the United Kingdom, they are sent to the various First Line Military and Red Cross Hospitals in the United Kingdom, and from these, when the patients have reached a certain convalescent stage, they are distributed to the many Auxiliary Red Cross Hospitals scattered throughout all the counties in England and Scotland. So numerous are these, that England and Scotland at the present time represent one large Hospital area, in which thousands of our sick and wounded soldiers are being restored to health and strength.

From what has been said, it will be apparent that in the present campaign the methods of assisting the wounded have undergone some modification from that carried out in other wars, for the fighting forces are not moving with the mobility characteristic of ordinary campaigns. The trench system of warfare has anchored our forces down to a certain area, and the campaign has resolved itself into a kind of siege warfare. In the trenches it is difficult to use the ordinary Army stretcher, especially in the zig-zag communication trenches, and it has been found that the wounded are best conveyed on a blanket. Modified stretchers have been devised to meet the difficulties, but it cannot be said that they have been very successful. Use has, however, been made of wheeled stretchers after the wounded have left the communication trenches, especially when the latter are near a suitable road. It is the Motor Ambulances that have done the chief part of the transport in the present campaign, along with the Hospital Ambulance Trains. Recourse has been had, too, to the canals in France, and many of the wounded have been brought down them by barges, the travelling by which, though slow, has been admitted by all the patients to be very restful and comfortable. Of Hospital Ships, too, there has been a large number put into service, and they have been a great boon to our sick and wounded crossing the Channel. When landed in this country, the

wounded are again conveyed by Ambulance Trains and Motor Ambulances to their destinations, thus completing the long line of medical assistance which stretches from the fighting front, be it in France or Salonica, to the quietness and comfort of our First Line Military or Red Cross Hospitals at home in Great Britain.

Reference has been previously made to the self-devotion and courage of the naval surgeons and of the splendid pluck and endurance shown by our sailors when

AN AMBULANCE OF THE FIRST SCOTTISH UNIT, INJURED BY A BOMB DROPPED FROM A TAUBE.

wounded and in pain. The same holds good with the medical officers and men of the sister service. If any proof of this were wanted, it is given by the fact that since the beginning of the war 137 British doctors have been killed in action, 58 have died of wounds, 62 of disease, and 707 have been wounded, giving a total of 964. These figures speak for themselves. In addition to the above casualties must be added a large number of stretcher-bearers and drivers of motor ambulances, who have given their lives for their country and their fellow-men. It is not, perhaps, generally realised how severe are the

conditions under which these men work, but it is only right that the people in this country should have brought to their notice the arduous and dangerous work which they carry through. Time after time ambulances are struck by shell and destroyed, as shown in the illustration, the drivers being wounded and sometimes even killed, as happened to one of the drivers (Gedley) in a Scottish section. Some of the reports of these drivers tell of the difficulties of their task and of the pluck and endurance of our wounded soldiers. One letter to a Scottish Branch says :—"We stayed at this place for close on five weeks, doing 'great and good work,' as we were told by one of General French's staff officers. Well, I don't know about great and good work, but I know this, that for three days and nights so great was the rush of work in carrying the wounded to the Hospital, and from the Hospital to the Station, that not one of our convoy, and there were about 50 vehicles, had any more than 12 hours' sleep. Still there wasn't a grumble to be heard, and everyone worked till he was exhausted, and then kept on working to keep himself from sleeping. It was no uncommon thing to see the driver of an ambulance sleeping over his wheel while the R.A.M.C. orderlies unloaded his car. At last the number of wounded diminished until it reached low figures again. I can tell you we were thankful, not because of ourselves, but because of our soldiers. It brings a lump into your throat when you lean over a poor battered piece of humanity and ask him how he feels, to hear his answer quite cheerfully, 'Not bad, chummy,' and all the time you know his hours are numbered. Well, it is war, but if the people at home could only see our men, witness the hardships they undergo, the pain and suffering they meet so cheerfully and uncomplainingly, they would not rest until they had done something to help them."

ONE OF A FLEET OF FIVE MOTOR LAUNCHES SENT OUT THIS YEAR TO THE TIGRIS BY THE SCOTTISH BRANCH OF THE BRITISH RED CROSS SOCIETY, THROUGH THE KINDNESS OF THE SCOTTISH DENNIS-BAYLEY FUND, RAISED BY SCOTTISH COAL OWNERS AND NATIONAL UNION OF SCOTTISH MINE WORKERS.

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